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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,221	09/28/2001	Masakatsu Gotou	501.40695X00	3864

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EXAMINER	
LATTIN, CHRISTOPHER W	
ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 06/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/965,221	Applicant(s) GOTOU ET AL.
	Examiner Christopher W Lattin	Art Unit 2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *08 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 29-33, 37-42, and 46-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruta (U.S. Patent 6,200,121) in view of Hashimoto (U.S. Patent 5,729,437).

Tsuruta teach all of the limitations of the presently claimed manufacturing method including forming a resin enclosure for block-molding a plurality of semiconductor chips by placing a plurality of semiconductor chips inside a cavity of a molding die along and then injecting a resin inside said cavity from a first side to a second side of a main surface of the substrate, the plurality of semiconductor chips being mounted on the main surface of the substrate from the first side to the second side of the surface with a predetermined space, but fail to teach cleaning the surface of the substrate prior to placing it in the enclosure. Hashimoto teach that "[I]f the surfaces of the substrate 6 and the semiconductor device 1 are activated with oxygen or argon plasma immediately before the process for applying the molding resin 5 is performed, further excellent contact of the molding resin 5 can be established. As a result the reliability of the electronic part can be improved more satisfactorily." See Hashimoto column 15 lines

14-20. It would have been obvious to one skilled in the art at the time of the invention to clean the substrate taught by Tsuruta prior to encapsulation to improve the contact of the molding resin and thus reliability of the electronic part as taught by Hashimoto. Tsuruta also fails to specify how or if the chips are connected to substrates. Hashimoto teaches wire bonding to electrically connect the chips to the substrate. It would have been obvious to one skilled in the art at the time of the invention to utilize wire bonds to provide electrical connection the chips to the substrate. With reference to claims 31, 32, 40 and 41, roughening and impurity removal are inherent aspects of the plasma treatment process.

With particular reference to claims 38 and 47, though Tsuruta fail to specify heating, bump attachment is discussed at the top of column 5. Hashimoto teaches in column 13 that heating during the mounting step allows conductive paste to flow, and, upon cooling to attach to surfaces. It would have been obvious to one skilled in the art at the time of the invention to use a heating step during mounting to allow conductive material to attach to surfaces, an inherent part of the bumping method taught by Tsuruta.

Claims 34-36, and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruta (U.S. Patent 6,200,121) in view of Hashimoto (U.S. Patent 5,729,437) as applied above, and further in view of Ishikawa (U.S. Patent 5,939,792).

Tsuruta is applied in view of Hashimoto above and teach all of the limitations of the invention, but fail to teach the use of high volume amounts silica fillers in the resin.

Ishikawa teaches the inclusion of large amounts silica filler in encapsulating resin to enhance the properties, such as water repellency, of the device. It therefore would have been obvious to one skilled in the art at the time of the invention to include high volume amounts of silica as taught by Ishikawa in the resin obviated by Tsuruta in view of Hashimoto.

Response to Arguments

Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection. The objection to the drawings is rescinded based on applicant's remarks.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Lattin whose telephone number is (703) 305-3017. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached at (703) 308-3325. The fax numbers for this Group are (703) 872-9318 for responses to non-final actions and (703) 872-9319 responses to final actions.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

CWL
June 4, 2003

John F. Niebling
Supervisory Patent Examiner
Technology Center 2800